



## COURSE DATASHEET

<b>Semester:</b>	2013/14/1
<b>Course:</b>	Modelling in Environmental Engineering
<b>Code:</b>	VEMKKI3244A
<b>Responsible department:</b>	Department of Process Engineering
<b>Department code:</b>	MKFO
<b>Responsible instructor:</b>	dr. Sándor Németh

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### Course objectives:

Introducing the theoretical fundamentals and practical methods of the analysis of environmental systems.

### Course content:

Introduction. Review of the modeling of chemical and environmental technologies. CAPE software System analysis: process variables, degree of freedom, identification, stability, controllability, sensitivity Solving of the mathematical models, numerical methods, model reduction Flow sheeting simulation. Analysis and design of the technology Modeling of the bioreactors Modeling a biogas recovery system Modeling of the biological waste water treatment system (Activated Sludge Model No 1 and No. 2) Modeling of the industrial waste water treatment system Modeling of the solution recovery system. Modeling of the toxic compounds spread in the air Modeling of an industrial waste destruction system

### Requirements, evaluation and grading:

Grading is based on the results of 3 midterm exams. Midterm exams consist of theoretical and practical parts. Theoretical parts cover the modelling and analysis methods. Practical parts involve solving particular problems. The grade is determined with the weighting of results of the midterm exams. Repeated examinations can be taken in the examination period.

### Required and recommended readings:

Öllös G.: Csatornázás és szennyvíztisztítás. Aqua, Bp. 1991. Benedek, P.: Biotechnológia a környezetvédelemben. MK. Bp. 1990. Wark, K.: Warner, C.F.: Air pollution, its origin and control. EPA és a felhasznált programcsomag kézikönyvei.